

#INSPIREDMATH

APRIL 2019, VOLUME 9

HAPPY MATHEMATICS & STATISTICS AWARENESS MONTH!



Math class is about having a growth mindset, it is about learning, and it is about effort. One of the hardest parts of teaching math is convincing students that they can do hard things and that they can learn at high levels. At a recent conference I attended, Dan Finkel (mathforlove.com) said, "you can't do hard things if you don't love it". This speaks to both students and teachers! Use the last few weeks of the school year to try something new. Challenge your students, and yourself. Click [here](#) for ideas on how to build a mathematical mindset community!

https://www.youtube.com/watch?v=hiiEeMN7vbQ&list=PL_o6rMc3QvCteH19_Q3Unyue706MEoudR&index=12



PROBLEM OF THE MONTH!

FACTORIZING QUADRATICS

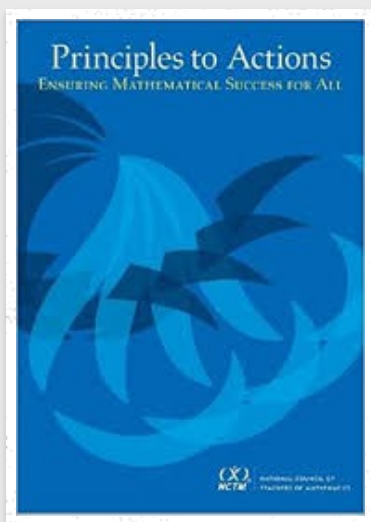
Directions: Fill in the blanks with **integers** so that the quadratic expression is factorable.

1. $x^2 + \underline{\hspace{1cm}}x + 4$
2. $x^2 + \underline{\hspace{1cm}}x - 12$
3. $3x^2 + \underline{\hspace{1cm}}x + 8$
4. $2x^2 + 3x + \underline{\hspace{1cm}}$

OPEN MIDDLE

Openmiddle.com is a collection of conceptually based problems that increase rigor, allow for multiple paths to solutions, multiple solutions, and require a higher depth of knowledge (DOK) than most problems that assess procedural *and* conceptual understanding. Founded by Robert Kaplinsky and Nanette Johnson, you know it has be be amazing! Problems range from kindergarten through calculus (with hints, solutions, and suggestions) and new ones are shared everyday via the Twitter community!

MARCH'S FOCUS: PRACTICE #7



1. Establishing mathematics goals to focus learning
2. Implement tasks that promote reasoning and problem solving
3. Use and connect mathematical representations
4. Facilitate meaningful discourse
5. Pose purposeful questions
6. Build procedural fluency from conceptual understanding
7. **Support productive struggle in learning mathematics**
8. Elicit and use evidence of student thinking

BE LESS HELPFUL AND ASK MORE QUESTIONS

We are teachers. It is ingrained in us to help our students. But what is *help*? Do you help when a student asks a question? *Before* a student asks a question? Do you help with homework? Do you hold study sessions before and/or after school to provide extra help to your students? Of course we want our students to love math and to "get it". But again, what is *help*? Read Denis Sheeran's book, [*Hacking Mathematics: 10 Problems That Need Solving*](#), to learn more about how to be less helpful in order to increase student understanding. Here are a few practical suggestions to start with:

1. Plan tomorrow's questions (hello, posing purposeful questions!)
2. Ask questions that don't have answers (engage their thinking!)
3. Rebrand your help sessions (students should come prepared to get questions to answer, not answers to their questions!)
4. Commit to question everything (student conceptual understanding needs your questions not your answers!)

A FINE LINE BETWEEN PRODUCTIVE AND DESTRUCTIVE STRUGGLE

"Teachers greatly influence how students perceive and approach struggle in the mathematics classroom" (Principles to Action, p.50). Our goal should not be to remove all struggle for our students but rather to foster the grit and desire to persevere through moments of struggle. We must provide the opportunity, the space to grapple with the information, and the support for productive struggle in the math classroom. In order to do so, we need to be aware of the fine line between productive and destructive struggle. Destructive struggle needs immediate attention and calls for teacher reflection regarding the task chosen or implementation and supports offered! Read below for characteristics of each!

Productive Struggle	Destructive Struggle
<ul style="list-style-type: none">✓ Student grapples with content✓ Student develops perseverance and resilience✓ Leads to understanding✓ Makes learning goals feel attainable and effort worthwhile✓ Student feels empowered✓ Creates a sense of hope✓ Exploration✓ Student feels they have something to contribute✓ Genuine curiosity✓ Questioning✓ Collaborating with peers✓ Willing to test ideas and learn from those ideas that didn't work	<ul style="list-style-type: none">✓ Student has run out of strategies✓ Student is disengaged✓ Student feels there is no entry in to assignment✓ Frustration✓ Anger✓ Makes learning goals feel hazy and out of reach✓ Leaves students feeling abandoned and on their own✓ Creates a sense of inadequacy✓ Student feels they do not and will not ever get the skills necessary to be successful✓ Struggle with no connection✓ Unreachable mathematics

A MUST WATCH VIDEO - THE LEARNING CHALLENGE

The Learning Challenge is one way to explain why more challenge leads to enhanced learning. Created by James Nottingham, the Learning Challenge uses the idea of a "pit," first used by Butler and Edwards.



#INSPIREDMATH TESTIMONIAL

"When your principal asks you to go to a professional development you are rarely excited. Lesson plans, extra assignments, and worrying about how your class will behave are all major factors into why I personally don't like to be absent. But the #INspirEDMath Extravaganza was for math teachers only. **Rarely are seminars for math teachers only!** IDOE had a fabulous meeting that **made me rethink** almost everything I did. I thought I was fairly adept at asking students questions to make them apply their knowledge. However, when we discussed **focusing questions vs funneling questions**, I realized I had work to do. **Leading students to the answer is much easier for me, but less learning-based for the student.** I absolutely hate wait time as well when asking questions. I just want to jump in and save students. But now I am determined to wait. I have also begun to come up with ways for students to help each other before I jump in. IDOE gave us **incredible ideas to use in the classroom on a daily basis to make math more engaging.** "My Favorite NO" is a simple way to identify where students stand on a concept and how they show their work. Desmos Battles have been the best thing for my classes! **Hands on activities are much easier than I had ever imagined.** The Inquiry Cube is incredibly fun for the kids to discover that **there is no wrong way to approach a problem.** After initially dreading going to the #INspirEDMath Extravaganza, I am now **anxiously waiting for another seminar** so that all the math teachers in our building can attend. This was best professional development I have been to in 11 years of teaching. I am turning my entire classroom upside down with the new, fun ways to learn! **This is one seminar that will get you excited about teaching math in all new ways!"**



Laura Rich
8th Grade Math Teacher
Lapel Middle School
Frankton Lapel Community Schools

ANALYTICAL ALGEBRA II UPDATES AND INFORMATION

Is your school going to offer Analytical Algebra II beginning with the 2019-2020 school year? Are you still a bit unsure of what the course actually is? Of who the course is actually for? Of how Analytical Algebra II actually differs from traditional Algebra II? IDOE's math team is here to help! We have several learning opportunities for administrators, coaches, curriculum leaders, prospective teachers of Analytical Algebra II, as well as current teachers of traditional Algebra II. Read on and sign up!

Webinars

Analytical Algebra II: The What & The Why - Tuesday, April 30, 3:30 p.m.-4:30 p.m. (ET) - In this first of two webinars we will discuss the origins and creation of the course as well as the goals of the course. Updates regarding the Commission for Higher Education (CHE) and the NCAA will be given. We will also begin to compare and contrast Analytical Algebra II with traditional Algebra II in an effort to build confidence and understanding. [Register here.](#)

Analytical Algebra II: Adapting & Gathering Resources - Thursday, May 16, 3:30 p.m.-4:30 p.m. (ET) - In this follow up webinar, we will focus on resources, specifically, how schools can utilize and adapt their current Algebra II text with Analytical Algebra II. We will also explore utilizing the math framework as well as begin to share digital resources. [Register here.](#)

Regional Summer Learning & Collaboration

Join us for a deep dive into Analytical Algebra II. Over the course of two days, educators will receive resources and pedagogical strategies that can be used to implement the course. Educators will also be given meaningful work time to collaborate with colleagues from around the state. Click on the location to register. Additional information will follow to registered participants closer to the date.

Southern Indiana - June 4 - June 5 - [Jasper, IN](#)

Central Indiana - June 6 - June 7 - [Indianapolis, IN](#)

Northern Indiana - June 10 - June 11 - [Warsaw, IN](#)

OPPORTUNITIES FOR THE FIELD



ICTM FALL CONFERENCE

SAVE THE DATE! September 29 – 30

The 2019 ICTM State Conference will be held in Indianapolis at the Marriott East Hotel on September 29 and 30. Please plan to attend and watch for information about session proposals, conference and hotel registration, in upcoming newsletters. This year proposals are due April 30th and the submission system will be open March 30th. Click [here](#) for more information and to submit a proposal!

6-8 MATHEMATICS CONTENT EXPERT WORK GROUP – ROUND 2

IDOE's math content specialists are looking to convene middle school educators for a second round of development on the framework. We will continue to create practical examples and provide digital resources for every standard in grade 6-8 mathematics, as well as Algebra 1. All courses are still in the developmental phase. If you are interested and available to come to the Indiana Association of School Principals building (11025 E. 25th St, Indianapolis) **Friday, April 26, from 8:30 a.m. to 2:30 p.m.** please complete the following [form](#).

K-5 MATHEMATICS CONTENT EXPERT WORK GROUP – ROUND 2

IDOE's math content specialists are looking to convene elementary school educators for a second round of development on the framework. We will continue to create practical examples and provide digital resources for every standard in grade K-5 mathematics. All courses are still in the developmental phase. If you are interested and available to come to the Indiana Association of School Principals building (11025 E. 25th St, Indianapolis) **Tuesday, April 30, from 8:30 a.m. to 2:30 p.m.** please complete the following [form](#).

EDUCATOR SPOTLIGHT: JAMIE LOWES

Nominated by: Amy Stevens and Lisa Leliaert

Catchphrase: "Now, let's pause for a tick..."-A phrase used by Jamie any time she is leading teachers or students through a lesson and wants her learners to stop and reflect.

Mrs. Jamie Lowes has spent all 23 years of her teaching career working with elementary students in the Greenfield-Central Community School Corporation. While most of those years were spent in upper elementary classrooms, the past 5 years she has served as an elementary Math Instructional Coach. In



2014, Jamie was selected as GCSC Teacher of the Year. From classroom to coach, Jamie's ability to light up the room with her smile spreads the joy of math throughout the halls of any building. Her strong communication skills encourage a team approach with administrators, teachers and fellow coaches. That team approach has positively impacted student achievement as well as students' attitudes towards math. Jamie is a model educator who focuses her work on what is best for kids through differentiation and purposeful planning. She is passionate about building relationships, strengthening student engagement and growing mindsets. Students who learn with Mrs. Lowes are reflective and truly believe that they are life-long learners who have the strategies to solve any problem that comes their way.

MATHEMATICS EDUCATOR SPOTLIGHT NOMINATION

We are always looking for rock star math educators who are innovative and inspiring; educators who lead, learn, and collaborate with humility and passion. If you know someone (or are that someone) click the button and nominate them (or yourself)!

SCHOOL IMPROVEMENT UNVEILS ITS REDESIGNED WEBSITE!

The Office of School Improvement has launched a redesigned [website](#) to ease identifying and accessing the resources available for districts and schools. These resources include a series of [trainings](#) to help schools and districts conduct comprehensive needs assessments and develop high-quality school improvement plans. Visitors can view recordings of these [trainings online](#). The trainings can be downloaded to incorporate in district or school-based presentations. These resources have been developed with the needs of Comprehensive Support and Improvement and Targeted Support and Improvement schools in mind. The resources are grounded in best practices for continuous school improvement applicable for all schools.

SUPPORTS FROM ASSESSMENT

ILEARN: SCORING OPEN-ENDED ITEMS MODULE

Released open-ended items with student responses and explanations of scoring. Everything can be shared with students to help them feel confident about how their answers will be scored! Emphasis is on quality of responses not quantity!

ILEARN MATHEMATICS FAQs

The Office of Assessment has provided a document answering all of your questions regarding the ILEARN assessment, test blueprints, item specifications, calculator policies, and much more!





YOUR IDOE MATHEMATICS TEAM



ROBIN CONTI

 @RobinLConti

Secondary Mathematics Specialist





 Indiana Department of Educati...  rconti@doe.in.gov
 (317)-233-6098  doe.in.gov



BEAU SCOTT

 @NerdCoreTeacher

Elementary Mathematics Specialist

 Indiana Department of Educati...  jscott3@doe.in.us
 (317)-232-9142  doe.in.gov